

Release notes for ENDF/B Development n-097_Bk_247
evaluation



April 26, 2017

- fudge-4.0 Warnings:

1. Cross section does not match sum of linked reaction cross sections
crossSectionSum label 0: total (Error # 0): CS Sum.

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 0.40%

2. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 1 (n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'1 delayed'] + gamma [total fission] [nubar]): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

3. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 2 (n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'1 delayed'] + gamma [total fission] [nubar]): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (4.498613e-09) is too small

4. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 3 (total): / Form 'eval': / Component 0 (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

5. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 3 (total): / Form 'eval': / Component 1 (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

6. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 4 (n + Bk247): / Form 'eval': / Component 0 (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

7. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 4 (n + Bk247): / Form 'eval': / Component 1 (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

8. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 8 (n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'1 delayed'] + gamma [total fission]): / Form 'eval': / Component 0 (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

9. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 8 (n[multiplicity:'energyDependent', emissionMode:'prompt'] + n[emissionMode:'1 delayed'] + gamma [total fission]): / Form 'eval': / Component 1 (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

10. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 9 (n + (Bk247_e1 ->Bk247 + gamma)): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (1.784207e-09) is too small

11. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 10 (n + (Bk247_e2 ->Bk247 + gamma)): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (2.414041e-09) is too small

12. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 11 (n + (Bk247_e3 ->Bk247 + gamma)): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (2.934005e-10) is too small

13. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 12 (n + (Bk247_e4 ->Bk247 + gamma)): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (6.396405e-10) is too small

14. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 13 (n + (Bk247_e5 ->Bk247 + gamma)): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (9.944199e-09) is too small

15. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 14 (n + (Bk247_e6 ->Bk247 + gamma)): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (2.577625e-10) is too small

16. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 15 (n + (Bk247_e7 ->Bk247 + gamma)): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (2.555827e-11) is too small

17. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 16 ($n + (Bk247_e8 \rightarrow Bk247 + \text{gamma})$): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (1.978764e-09) is too small

18. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 17 ($n + (Bk247_c \rightarrow Bk247 + \text{gamma})$): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

19. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 18 ($Bk248 + \text{gamma}$): / Form 'eval': / Component 0 (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

20. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 18 ($Bk248 + \text{gamma}$): / Form 'eval': / Component 1 (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

21. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 19 ($n + Bk247 [\text{angular distribution}]$): / Form 'eval': (Error # 1): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

22. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 20 ($n[\text{multiplicity}:\text{'energyDependent'}, \text{emissionMode}:\text{'prompt'}] + n[\text{emissionMode}:\text{'1 delayed'}] + \text{gamma} [\text{total fission}] [\text{spectrum}]$): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

23. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 21 ($n[\text{multiplicity}:\text{'energyDependent'}, \text{emissionMode}:\text{'prompt'}] + n[\text{emissionMode}:\text{'1 delayed'}] + \text{gamma} [\text{total fission}] [\text{spectrum}]$): / Form 'eval': (Error # 0): Condition num.

WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small

24. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.

Section 22 ($n[\text{multiplicity}:\text{'energyDependent'}, \text{emissionMode}:\text{'prompt'}] + n[\text{emissionMode}:\text{'1 delayed'}] + \text{gamma} [\text{total fission}] [\text{spectrum}]$): / Form 'eval': (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

25. The ratio of smallest/largest eigenvalue is quite small, possibly leading to numerical instability in downstream codes.
Section 23 (n/multiplicity: 'energyDependent', emissionMode: 'prompt'] + n/emissionMode: '1 delayed'] + gamma [total fission] [spectrum]): / Form 'eval': (Error # 0): Condition num.

```
WARNING: Ratio of smallest/largest eigenvalue (0.000000e+00) is too small
```

- fudge-4.0 Errors:

1. Duplicate Eout in outgoing distribution
Reading ENDF file: ../n-097_Bk-247.endf (Error # 0): Bad Eout

```
WARNING: skipping duplicate e_out = 5481950.0, i1 = 79 6 10.0
WARNING: skipping duplicate e_out = 5481960.0, i1 = 79 7 20.0
WARNING: skipping duplicate e_out = 5481970.0, i1 = 79 8 30.0
WARNING: skipping duplicate e_out = 5481990.0, i1 = 79 9 50.0
... plus 3 more instances of this message
```

2. Energy range of data set does not match cross section range
reaction label 9: n + (Bk247_c ->Bk247 + gamma) / Product: Bk247_c / Decay product: gamma_a / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (170000.0 -> 20000000.0) vs (110900.0 -> 20000000.0)
```

3. Energy range of data set does not match cross section range
reaction label 9: n + (Bk247_c ->Bk247 + gamma) / Product: Bk247_c / Decay product: gamma_b / Multiplicity: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (137559.0 -> 20000000.0) vs (110900.0 -> 20000000.0)
```

4. Energy range of data set does not match cross section range
reaction label 9: n + (Bk247_c ->Bk247 + gamma) / Product: Bk247_c / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (137559.0 -> 20000000.0) vs (110900.0 -> 20000000.0)
```

```
WARNING: Domain doesn't match the cross section domain: (196800.0 -> 20000000.0) vs (110900.0 -> 20000000.0)
```

```
WARNING: Domain doesn't match the cross section domain: (196800.0 -> 20000000.0) vs (110900.0 -> 20000000.0)
```

```
WARNING: Domain doesn't match the cross section domain: (250000.0 -> 20000000.0) vs (110900.0 -> 20000000.0)
... plus 3 more instances of this message
```

5. Energy range of data set does not match cross section range
reaction label 9: n + (Bk247_c ->Bk247 + gamma) / Product: Bk247_c / Decay product: gamma_c / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)

```
WARNING: Domain doesn't match the cross section domain: (170000.0 -> 20000000.0) vs (110900.0 -> 20000000.0)
```

6. Energy range of data set does not match cross section range
reaction label 9: n + (Bk247_c ->Bk247 + gamma) / Product: Bk247_c / Decay product: gamma_d / Multiplicity: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (196800.0 -> 20000000.0) vs (110900.0 -> 20000000.0)

7. Energy range of data set does not match cross section range
reaction label 9: n + (Bk247_c ->Bk247 + gamma) / Product: Bk247_c / Decay product: gamma_e / Multiplicity: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (196800.0 -> 20000000.0) vs (110900.0 -> 20000000.0)

8. Energy range of data set does not match cross section range
reaction label 9: n + (Bk247_c ->Bk247 + gamma) / Product: Bk247_c / Decay product: gamma_f / Multiplicity: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (250000.0 -> 20000000.0) vs (110900.0 -> 20000000.0)

9. Energy range of data set does not match cross section range
reaction label 9: n + (Bk247_c ->Bk247 + gamma) / Product: Bk247_c / Decay product: gamma_g / Multiplicity: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (250000.0 -> 20000000.0) vs (110900.0 -> 20000000.0)

10. Energy range of data set does not match cross section range
reaction label 9: n + (Bk247_c ->Bk247 + gamma) / Product: Bk247_c / Decay product: gamma_h / Multiplicity: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (300000.0 -> 20000000.0) vs (110900.0 -> 20000000.0)

11. Energy range of data set does not match cross section range
reaction label 9: n + (Bk247_c ->Bk247 + gamma) / Product: Bk247_c / Decay product: gamma_i / Multiplicity: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (400000.0 -> 20000000.0) vs (110900.0 -> 20000000.0)

12. Calculated and tabulated Q values disagree.
reaction label 10: n[multiplicity:'2'] + Bk246 + gamma (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -6412481.456420898 eV vs -6549130. eV!

13. Energy range of data set does not match cross section range
reaction label 10: n[multiplicity:'2'] + Bk246 + gamma / Product: gamma_a / Multiplicity: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (7000000.0 -> 20000000.0) vs (6575870.0 -> 20000000.0)

14. Energy range of data set does not match cross section range
reaction label 10: n[multiplicity:'2'] + Bk246 + gamma / Product: gamma_a / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (7000000.0 -> 20000000.0) vs (6575870.0 -> 20000000.0)

15. Energy range of data set does not match cross section range
reaction label 10: n[multiplicity:'2'] + Bk246 + gamma / Product: gamma_b / Multiplicity: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (7000000.0 -> 20000000.0) vs (6575870.0 -> 20000000.0)

16. Energy range of data set does not match cross section range
reaction label 10: n[multiplicity:'2'] + Bk246 + gamma / Product: gamma_b / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (7000000.0 -> 20000000.0) vs (6575870.0 -> 20000000.0)

17. Calculated and tabulated Q values disagree.
reaction label 11: n[multiplicity:'3'] + Bk245 + gamma (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -12330807.8187561 eV vs -1.24675e7 eV!

18. Energy range of data set does not match cross section range
reaction label 11: n[multiplicity:'3'] + Bk245 + gamma / Product: gamma_a / Multiplicity: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (13000000.0 -> 20000000.0) vs (12518400.0 -> 20000000.0)

19. Energy range of data set does not match cross section range
reaction label 11: n[multiplicity:'3'] + Bk245 + gamma / Product: gamma_a / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (13000000.0 -> 20000000.0) vs (12518400.0 -> 20000000.0)

20. Energy range of data set does not match cross section range
reaction label 11: n[multiplicity:'3'] + Bk245 + gamma / Product: gamma_b / Multiplicity: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (13000000.0 -> 20000000.0) vs (12518400.0 -> 20000000.0)

21. Energy range of data set does not match cross section range
reaction label 11: n[multiplicity:'3'] + Bk245 + gamma / Product: gamma_b / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (13000000.0 -> 20000000.0) vs (12518400.0 -> 20000000.0)

22. Energy range of data set does not match cross section range
reaction label 11: n[multiplicity:'3'] + Bk245 + gamma / Product: gamma_c / Multiplicity: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (13000000.0 -> 20000000.0) vs (12518400.0 -> 20000000.0)

23. Energy range of data set does not match cross section range
reaction label 11: n[multiplicity:'3'] + Bk245 + gamma / Product: gamma_c / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (13000000.0 -> 20000000.0) vs (12518400.0 -> 20000000.0)

24. Energy range of data set does not match cross section range
reaction label 11: n[multiplicity:'3'] + Bk245 + gamma / Product: gamma_d / Multiplicity: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (13000000.0 -> 20000000.0) vs (12518400.0 -> 20000000.0)

25. Energy range of data set does not match cross section range
reaction label 11: n[multiplicity:'3'] + Bk245 + gamma / Product: gamma_d / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (13000000.0 -> 20000000.0) vs (12518400.0 -> 20000000.0)

26. Energy range of data set does not match cross section range
reaction label 11: n[multiplicity:'3'] + Bk245 + gamma / Product: gamma_e / Multiplicity: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (13000000.0 -> 20000000.0) vs (12518400.0 -> 20000000.0)

27. Energy range of data set does not match cross section range
reaction label 11: n[multiplicity:'3'] + Bk245 + gamma / Product: gamma_e / Distribution: / uncorrelated - angular - isotropic: (Error # 0): Domain mismatch (a)

WARNING: Domain doesn't match the cross section domain: (13000000.0 -> 20000000.0) vs (12518400.0 -> 20000000.0)

28. Calculated and tabulated Q values disagree.
reaction label 12: n[multiplicity:'4'] + Bk244 (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: -19302177.95480347 eV vs -1.94388e7 eV!

29. Calculated and tabulated Q values disagree.
reaction label 14: Bk248 + gamma (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: 5619420.803955078 eV vs 5481940. eV!

30. Multiplicity does not match sum of linked product multiplicities!
multiplicitySum label 11: n + (Bk247_c ->Bk247 + gamma) total gamma multiplicity (Error # 0): summedMultiplicityMismatch

WARNING: Multiplicity does not match sum of linked product multiplicities! Max diff: 7.58%

31. Multiplicity does not match sum of linked product multiplicities!
multiplicitySum label 12: n[multiplicity:'2'] + Bk246 + gamma total gamma multiplicity (Error # 0): summedMultiplicityMismatch

WARNING: Multiplicity does not match sum of linked product multiplicities! Max diff: 66.06%

32. Multiplicity does not match sum of linked product multiplicities!
multiplicitySum label 13: n[multiplicity:'3'] + Bk245 + gamma total gamma multiplicity (Error # 0): summedMultiplicityMismatch

WARNING: Multiplicity does not match sum of linked product multiplicities! Max diff: 100.00%

33. Calculated and tabulated Q values disagree.
fissionComponent label 0: /reactionSuite/fissionComponents/fissionComponent[@label='0'] (Error # 0): Q mismatch

WARNING: Calculated and tabulated Q-values disagree: 231084222247.7214 eV vs 2.150281e8 eV!

34. Calculated and tabulated Q values disagree.
fissionComponent label 1: /reactionSuite/fissionComponents/fissionComponent[@label='1'] (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 231084222247.7214 eV vs 2.150281e8 eV!
```

35. Calculated and tabulated Q values disagree.
fissionComponent label 2: /reactionSuite/fissionComponents/fissionComponent[@label='2']
(Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 231084222247.7214 eV vs 2.150281e8 eV!
```

36. Calculated and tabulated Q values disagree.
fissionComponent label 3: /reactionSuite/fissionComponents/fissionComponent[@label='3']
(Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 231084222247.7214 eV vs 2.150281e8 eV!
```

37. A covariance matrix was not positive semi-definite, so it has negative eigenvalues.
Section 19 (n + Bk247 [angular distribution]): / Form 'eval': /LegendreLValue L=1 vs 1
(Error # 0): Bad evs

```
WARNING: 10 negative eigenvalues! Worst case = -6.825016e-04
```

- njoy2012 Warnings:

1. Evaluation has no resonance parameters given
unresr...calculation of unresolved resonance cross sections (0): No RR

```
---message from unresr---mat 9746 has no resonance parameters  
copy as is to nout
```

2. In some evaluations, the partial fission reactions MT=19, 20, 21, and 38 are given in File 3, but no corresponding distributions are given. In these cases, it is assumed that MT=18 should be used for the fission neutron distributions.
heatr...prompt kerma (0): HEATR/hinit (3)

```
---message from hinit---mt19 has no spectrum  
mt18 spectrum will be used.
```

3. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (1): HEATR/hinit (4)

```
---message from hinit---mf6, mt 16 does not give recoil za= 97246  
one-particle recoil approx. used.
```

4. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (2): HEATR/hinit (4)

```
---message from hinit---mf6, mt 17 does not give recoil za= 97245  
one-particle recoil approx. used.
```

5. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (3): HEATR/hinit (4)

```
---message from hinit---mf6, mt 37 does not give recoil za= 97244  
one-particle recoil approx. used.
```

6. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (4): HEATR/hinit (4)

---message from hinit---mf6, mt 51 does not give recoil za= 97247
one-particle recoil approx. used.

7. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (5): HEATR/hinit (4)

---message from hinit---mf6, mt 52 does not give recoil za= 97247
one-particle recoil approx. used.

8. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (6): HEATR/hinit (4)

---message from hinit---mf6, mt 53 does not give recoil za= 97247
one-particle recoil approx. used.

9. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (7): HEATR/hinit (4)

---message from hinit---mf6, mt 54 does not give recoil za= 97247
one-particle recoil approx. used.

10. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (8): HEATR/hinit (4)

---message from hinit---mf6, mt 55 does not give recoil za= 97247
one-particle recoil approx. used.

11. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (9): HEATR/hinit (4)

---message from hinit---mf6, mt 56 does not give recoil za= 97247
one-particle recoil approx. used.

12. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (10): HEATR/hinit (4)

---message from hinit---mf6, mt 57 does not give recoil za= 97247
one-particle recoil approx. used.

13. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (11): HEATR/hinit (4)

---message from hinit---mf6, mt 58 does not give recoil za= 97247
one-particle recoil approx. used.

14. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (12): HEATR/hinit (4)

---message from hinit---mf6, mt 91 does not give recoil za= 97247
one-particle recoil approx. used.

15. Recoil is not given, so one-particle recoil approximation used.
heatr...prompt kerma (13): HEATR/hinit (4)

---message from hinit---mf6, mt102 does not give recoil za= 97248
photon momentum recoil used.

16. There is a problem with the fission energy release.
heatr...prompt kerma (18): HEATR/nheat (3)

```
---message from nheat---changed q from 2.150281E+08 to 2.024827E+08
      for mt 18
```

17. Evaluation has no resonance parameters given
purr...probabalistic unresolved calculation (0): No RR

```
---message from purr---mat 9746 has no resonance parameters
      copy as is to nout
```

- **xsectplotter Errors:**

1. Duplicate Eout in outgoing distribution
(Error # 2): Bad Eout

```
WARNING: skipping duplicate e_out = 5481950.0, i1 = 79 6 10.0
WARNING: skipping duplicate e_out = 5481960.0, i1 = 79 7 20.0
WARNING: skipping duplicate e_out = 5481970.0, i1 = 79 8 30.0
WARNING: skipping duplicate e_out = 5481990.0, i1 = 79 9 50.0
... plus 3 more instances of this message
```